UNITED STATES PATENT AND TRADEMARK OFFICE

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EXAMINER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>13 November 2008</u>.

2a)☐ This action is **FINAL**.　　2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-12</u> is/are pending in the application.

　　4a) Of the above claim(s) <u>3,5,7 and 10</u> is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1,2,4,6,8,9,11 and 12</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>09 March 2004</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☒ All　b)☐ Some * c)☐ None of:

　　　1.☒ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>3/19/2008</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   The OBJECTION of IDS 3/19/2008 has been withdrawn.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1, 2, 4, 6, 9, 11, and 12 rejected under 35 U.S.C. 103(a) as being

unpatentable over Ammitzboell ("USPGPUB 2002/0120769") and in view of RFC 3376.

Ammitzboell is not silent about:

        Regarding claim 1, a communication method in a multicast communication network,

including at least one Layer-2 switch interposed between two Layer-3 switches, for distributing a

multicast packet from a multicast transmitting terminal (source) through at least the Layer-2

switch to a plurality of multicast receiving terminals (receivers) (see Ammitzboell; abstract;

"methods and apparatuses for multicasting traffic control protocol pruning in a layer 2 network. A

layer 2 device such as a switch with a plurality of ports includes a multicast traffic control protocol

pruning algorithm executable form the layer 2 device to control multicast traffic in the layer 2

network."), comprising: forming a receiving terminal discrimination (i.e. selection) mechanism (see

Ammitboell; abstract; "multicast traffic control protocol pruning algorithm") for discriminating (i.e.

selecting) multicast receiving terminals (see Ammitboell; paragraph 0039; "FIG. 2 shows an

example of a network 200 using IGMP pruning. A layer 2 device 220, such as a switch, controls to which ports (numbered 1 through 24) IP multicast traffic is forwarded by snooping the IGMP query, report and leave messages. The query message is used to start an internal timer and the IGMP report and leave message is used to maintain the IGMP pruning table (in which is stored information about which host(s) is/are joined on which port(s))") for receiving distribution of said multicast packets by using a discrimination (i.e. selection) packet (see Ammitboell; paragraph 0039; "The query message is used to start an internal timer and the IGMP report and leave message is used to maintain the IGMP pruning table (in which is stored information about which host(s) is/are joined on which port(s))"), to be transmitted from said multicast receiving terminal (see Ammitboell; paragraph 0039; "IGMP report" messages are sent by receiving terminal) to said multicast transmitting terminal when sending an IGMP-JOIN packet (see Ammitboell; paragraph 0039; "IGMP report" message/packet is the "IGMP JOIN" message/packet. "IGMP report" is transmitted from a receiving terminal to a source, the multicast transmitting terminal), for teaching said Layer- 2 switch of the existence of the multicast receiving terminal requesting distribution of said multicast packets under the Layer-2 switch (see Ammitboell; paragraph 0039; "The query message is used to start an internal timer and the IGMP report and leave message is used to maintain the IGMP pruning table (in which is stored information about which hot(s) is/are joined on which port(s)"; paragraph 0041; "An IGMP table 212 stores information about which interfaces between the router 210 and the various and VLANs have receivers joined. The layer 2 device 220 includes an IGMP pruning algorithm 250, and an IGMP pruning table 252 is stored on the layer 2 device 220. In the exemplary embodiment of FIG. 2, the layer 2 device 220 is a switch"); and distributing multicast packets selectively by said receiving terminal discrimination (i.e. selection) mechanism only to multicast receiving terminals requesting distribution of said multicast packets (see Ammitboell; paragraph 0038l paragraph 0039; paragraph 0040; disclosure that multicast packets are selectively distributed using the "IGMP messages" such as "report", "leave" and "query" which are "snooped" by the layer 2 switch.) when there are multicast receiving terminals relating to such requests under said Layer-2 switches (see Ammitboell; figure 2;

"receiver" associated with the "IP MC transmitter" to which traffic is selectively sent without

sending it to other ports on the network).

Ammitzboell is silent about:

Regarding claim 1, where the discrimination (i.e. selection) packet includes an IP header

and MAC header and wherein the IP source address and MAC source address are an IP address

and MAC address of a multicast group to which said multicast receiving terminal belongs

RFC 3376 is not silent about:

Regarding claim 1, where the discrimination (i.e. selection) packet includes an IP header

and MAC header and wherein the IP source address and MAC source address (i.e. header

information) are an IP address and MAC address of a multicast group to which said multicast

receiving terminal (i.e. client terminal, terminal) belongs (see RFC 3376; page 13

"Membership Report Message Format"; page 14 "Group Record Format"; page

15 "Multicast Address"; teaches of the IP address and MAC address of a

multicast group being a header of the message).

It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the invention of Ammitzboell, as taught by RFC 3376, thereby

following a standard.

Ammitzboell is not silent about:

Regarding claim 2, a multicast receiving terminal (receiver) for receiving distribution of multicast packets from a multicast transmitting terminal through at least one Layer-2 switch, interposed between two Layer-3 switches (see Ammitzboell; abstract; "methods and apparatuses for multicasting traffic control protocol pruning in a layer 2 network. A layer 2 device such as a switch with a plurality of ports includes a multicast traffic control protocol pruning algorithm executable form the layer 2 device to control multicast traffic in the layer 2 network."),

provided with a discrimination (i.e. selection) packet transmitting function unit for generating a discrimination packet for teaching said Layer-2 switch of the existence of the multicast receiving terminal requesting distribution of said multicast packets under the Layer-2 switch (see Ammitboell; paragraph 0039; "The query message is used to start an internal timer and the IGMP report and leave message is used to maintain the IGMP pruning table (in which is stored information about which hot(s) is/are joined on which port(s)"; paragraph 0041; "An IGMP table 212 stores information about which interfaces between the router 210 and the various and VLANs have receivers joined. The layer 2 device 220 includes an IGMP pruning algorithm 250, and an IGMP pruning table 252 is stored on the layer 2 device 220. In the exemplary embodiment of FIG. 2, the layer 2 device 220 is a switch") and transmitting it to said multicast transmitting terminal (see Ammitzboell; paragraph 0039; "IGMP report" messages are sent by receiving terminal) when sending an IGMP-J0IN packet (see Ammitzboell; paragraph 0039; "IGMP report" message/packet is the "IGMP JOIN" message/packet. "IGMP report" is transmitted from a receiving terminal to a source, the multicast transmitting terminal), the discrimination packet includes an IP header and MAC header and wherein the IP source address and MAC source address are an IP address and MAC address of a multicast group to which said multicast receiving terminal belongs.

Regarding claim 4, a multicast receiving terminal (receiver), transmitting said discrimination packet periodically by unicast (see Ammitzboell; paragraph 0039; "The query message is used to start an internal timer and the IGMP report and leave message is used to

maintain the IGMP pruning table (in which is stored information about which host(s) is/are joined

on which port(s)", thus the messages are used to maintain a table hence are transmitted

periodically to maintain the table.).

Ammitzboell is silent about:

Regarding claim 2, where the discrimination packet (i.e. selection) includes an IP header

and MAC header and wherein the IP source address and MAC source address are an IP address

and MAC address of a multicast group to which said multicast receiving terminal belongs.

RFC 3376 is not silent about:

Regarding claim 2, where the discrimination packet (i.e. selection) includes an IP header

and MAC header and wherein the IP source address and MAC source address (i.e. header

information) are an IP address and MAC address of a multicast group to which said multicast

receiving terminal (i.e. client terminal, terminal) belongs (see RFC 3376; page 13

"Membership Report Message Format"; page 14 "Group Record Formal"; page

15 "Multicast Address"; teaches of the IP address and MAC address of a

multicast group being a header of the message).

It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the invention of Ammitzboell, as taught by RFC 3376, thereby

following a standard.

Ammitboell is not silent about:

Regarding claim 6, a Layer-2 switch, interposed between two Layer-3 switches, for relaying a multicast packet transmitted from a multicast transmitting terminal (source) and distributing it to a multicast receiving terminal (receiver) (see Ammitzboell; abstract; "methods and apparatuses for multicasting traffic control protocol pruning in a layer 2 network. A layer 2 device such as a switch with a plurality of ports includes a multicast traffic control protocol pruning algorithm executable form the layer 2 device to control multicast traffic in the layer 2 network."), provided with: a snooping function unit (see Ammitboell; paragraph 0039; "A layer 2 device 220, such as a switch, controls to which ports (numbered 1 through 24) IP multicast traffic is forwarded by snooping the IGMP query, report and leave messages", thus having a snooping function unit) for monitoring for a discrimination packet transmitted from said multicast receiving terminal (see Ammitboell; paragraph 0039; "IGMP report" messages are sent by receiving terminal) to said multicast transmitting terminal when sending an IGMP-JOIN packet (see Ammitboell; paragraph 0039; "IGMP report" message/packet is the "IGMP JOIN" message/packet. "IGMP report" is transmitted from a receiving terminal to a source, the multicast transmitting terminal) so as to teach said Layer-2 switch that there is a multicast receiving terminal requesting distribution of said multicast packets existing under the Layer-2 switch (see Ammitboell; paragraph 0039; "The query message is used to start an internal timer and the IGMP report and leave message is used to maintain the IGMP pruning table (in which is stored information about which hot(s) is/are joined on which port(s)"; paragraph 0041; "An IGMP table 212 stores information about which interfaces between the router 210 and the various and VLANs have receivers joined. The layer 2 device 220 includes an IGMP pruning algorithm 250, and an IGMP pruning table 252 is stored on the layer 2 device 220. In the exemplary embodiment of FIG. 2, the layer 2 device 220 is a switch"), the discrimination packet includes an IP header and MAC header and wherein the IP source address and MAC source address are an IP address and MAC address of a multicast group to which said multicast receiving terminal belongs; and a learning function unit for learning the existence of said multicast receiving terminal based on said discrimination packet extracted by

said snooping function unit (see Ammitboell; paragraph 0041; "AN IGMP table 212 stores information about which interfaces between the router 210 and the various and VLANs have receivers joined. The layer 2 device 220 includes an IGMP pruning algorithm 250, and an IGMP pruning table 252 is stored on the layer 2 device 220. In the exemplayr embodiment of FIG. 2, the layer 2 device 220 is a switch").

Regarding claim 8, a Layer-2 switch wherein said learning function unit includes a distribution table (see Ammitboell; paragraph 0039; "IGMP pruning table 252"), said distribution table (see Ammitboell; paragraph 0039; "IGMP pruning table 252") learns said IP source address and MAC source address (see Ammitboell; paragraph 0005; "IGMP pruning is a method for layer 2 control of IP multicast group Media Access Control (MAC) addresses. It is a non-standard method based on snooping IGMP query, report and leave messages, and using these to figure out where IP multicast transmitters and receivers are present. It is basically layer 3 protocol information used to control layer 2 forwarding/filtering behavior"), then multicast packets transmitted from said multicast transmitting terminal (source) are distributed in accordance with said distribution table (see Ammitboell; paragraph 0041; "An IGMP table 212 stores information about which interfaces between the router 210 and the various and VLANs have receivers joined. The layer 2 device 220 includes and IGMP pruning algorithm 250, and an IGMP pruning table 252 is stored on the layer 2 device 220. In the exemplary embodiment of FIG. 2, the layer 2 device 220 is a switch").

Ammitboell is silent about:

Regarding claim 6, where the discrimination packet includes an IP header and MAC header and wherein the IP source address and MAC source address are an IP address and MAC address of a multicast group to which said multicast receiving terminal belongs.

RFC 3376 is not silent about:

Regarding claim 6, where the discrimination packet includes an IP header and MAC header and wherein the IP source address and MAC source address (i.e. header

information) are an IP address and MAC address of a multicast group to which said multicast

receiving terminal (i.e. client terminal, terminal) belongs (see RFC 3376; page 13

"Membership Report Message Format"; page 14 "Group Record Format"; page

15 "Multicast Address"; teaches of the IP address and MAC address of a

multicast group being a header of the message).

It would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the invention of Ammitzboell, as taught by RFC 3376, thereby

following a standard.

Ammitboell is not silent about:

      Regarding claim 9, a Layer-3 switch, with at least a Layer-2 switch interposed between it and another Layer-3 switch, for further relaying multicast packets transmitted from a multicast transmitting terminal (source) through the Layer-2 switch and distributing it to a multicast receiving terminal and for transmitting a discrimination packet, when sending an IGMP-JOIN packet, teaching said Layer-2 switch that there is a multicast receiving terminal (receiver) requesting distribution of said multicast packets existing under the Layer-2 switch to said multicast transmitting terminal (see Ammitzboell; abstract; "methods and apparatuses for multicasting traffic control protocol pruning in a layer 2 network. A layer 2 device such as a switch with a plurality of ports includes a multicast traffic control protocol pruning algorithm executable form the layer 2 device to control multicast traffic in the layer 2 network."), provided with: a decision function unit for deciding if a received packet is a discrimination packet or a general packet other than a discrimination packet (see Ammitboell; paragraph 0039; "FIG. 2 shows an example of a network 200 using IGMP pruning. A layer 2 device 220, such as a switch, control to which ports (numbered 1 through 24) IP multicast traffic is forwarded by snooping the IGMP query, report and leave messages. The query message is used to start an internal timer and the IGMP report and leave message is used to maintain the IGMP pruning table (in which is stored information about which host(s) is/are joined on which port(s)"), the discrimination packet includes an IP header and MAC header and wherein the IP source address and MAC source address are an address and MAC address of a multicast group to which said multicast receiving terminal belongs; and a header processing function unit for processing the MAC header of said received packet (see Ammitboell; the device is a layer 2 device therefore it contains a header processing unit for processing the MAC header of a received packet) and performing different processing in accordance with results of decision of said decision function unit (see Ammitboell; paragraph 0041; "An IGMP table 212 stores information about which interfaces between the router 210 and the various and VLANs have receivers joined. The layer 2 device 220 includes an

IGMP pruning algorithm 2250, and an IGMP pruning table 252 is stored on the layer 2 device

220. In the exemplary embodiment of FIG. 2, the layer 2 device 220 is a switch.").

Regarding claim 11, a Layer-3 switch, wherein said header processing function unit does

not process the source address of said MAC header when said decision function unit decides that

said received packet is a discrimination packet (It is and was well known to one of ordianry skill in

the art at the time of the invention that the source MAC address does not need to be procfessed.)

and performs general rewriting processing on said MAC header when it decides that said

received packet is a general packet (It is was and is well known to one of ordinary skill in the art

that MAC addresses are rewritten on a hob by hob basis in switches and routers. It is the basis

of how MAC address forwarding is done in IP networks using IEEE 802 protocol stack.).

Regarding claim 12, a Layer-3 switch as set forth in claim 9, wherein said decision

function unit decides if said received packet is a discrimination packet or a general packet in

accordance with whether said IP header and MAC header of a received packet are a multicast

type address or unicast type address (see Ammitboell; paragraph 0038; "Hosts that wish to join

an IP multicast group do so by sending an IGMP report message for the group(s) they wish to

receive. An IP multicast message for the group(s) they wish to receive. AN IP multicast router

sends out periodic IGMP queries in the VLANs A, B and C. For each query sent, a receiving host

must respond with an IGMP report message if it wants to keep receiving IP multicast, it can send

an IGMP leave message. Note that if a host does not transmit a leave (e.g. because it was

powered off) the periodic IGMP query/IGMP report system will ensure that registration is

removed").

Ammitboell is silent about:

Regarding claim 9, where the discrimination packet includes an IP header and MAC

header and wherein the IP source address and MAC source address are an address and MAC

address of a multicast group to which said multicast receiving terminal belongs.

RFC 3376 is not silent about:

Regarding claim 9, where the discrimination packet includes an IP header and MAC header and wherein the IP source address (i.e. header information) and MAC source address are an address and MAC address of a multicast group to which said multicast receiving terminal (i.e. client terminal, terminal) belongs (see RFC 3376; page 13 "Membership Report Message Format"; page 14 "Group Record Format"; page 15 "Multicast Address"; teaches of the IP address and MAC address of a multicast group being a header of the message).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Ammitzboell, as taught by RFC 3376, thereby following a standard.

Conclusion

//pertinent references are:

- US 20020120769 A1   Multicast traffic control protocol pruning in a layer 2 switch
- US 20030123453 A1   Method and apparatus of directing multicast traffic in an Ethernet MAN
- US 5517494 A   Method and system of multicast routing for groups with a single transmitter
- US 5926463 A   Method and apparatus for viewing and managing a configuration of a computer network
- US 6252857 B1   Method and apparatus for provisioned and dynamic quality of service in a communications network
- US 6331983 B1   Multicast switching
- US 6370142 B1   Method and apparatus for performing per-port IP multicast pruning
- US 6839348 B2   System and method for distributing multicasts in virtual local area networks
- US 6873627 B1   System and method for sending packets over a computer network
- US 6950439 B1   Method for providing summary information about recipients of IP multicast sessions
- US 7012891 B1   Method and apparatus for applying quality of service to multicast streams transmitted in a cable network

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwang B. Yao whose telephone number is 571-272-3182. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Faile can be reached on 571-272-3050. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/ADAM DUDA/
Examiner, Art Unit 2416

/Kwang B. Yao/
Supervisory Patent Examiner, Art Unit 2416